



299-E33-72 (A6880)

Log Data Report

Borehole Information:

Borehole: 299-E33-72 (A6880)		Site: Near the 216-B-8 Crib			
Coordinates (Plant)		GWL (ft)¹: Not Reached		GWL Date:	
North 573789	East 137437	Drill Date Dec. 1947	TOC² Elevation 638.8 ft	Total Depth (ft) 150	Type

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Steel	2.2	8.625	7.875	0.375	0	150

Borehole Notes:

The casing stickup was measured at 2.2 ft. The casing thickness and outside diameter were measured with a caliper.

Logging Equipment Information:

Logging System: Gamma 2B		Type: SGLS (35%)
Calibration Date: 09/00	Calibration Reference: GJO-2001-245-TAR	
	Logging Procedure: MAC-HGLP 1.6.5	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2/Repeat				
Date	8/24/01	8/27/01				
Logging Engineer	Musial	Musial				
Start Depth (ft)	2.5	56.0				
Finish Depth (ft)	71.0	150				
Count Time (sec)	100	100				
Live/Real	R	R				
Shield (Y/N)	N	N				
MSA Interval (ft)	0.5	0.5				
ft/min	n/a³	n/a				
Pre-Verification	B0038CAB	B0039CAB				
Start File	B0038000	B0039000				
Finish File	B0038137	B0039188				
Post-Verification	B0038CAA	B0039CAA				

Logging Operation Notes:

Zero reference is the top of casing. Depth return error on logging run 1 was 0.5 in. (high) and 1.25 in. (low) on run 2. File B0038CAB was evaluated in the field and passed verification criteria. No fine gain adjustments were made on 8/24/01 (log run 1). Fine gain adjustment of 2 channels was made at file B0039085 (98.5 ft) on 8/27/01 (log run 2). Fine gain adjustment of 3 channels was made at file B0039142 (127.0 ft) on 8/27/01 (log run 2). Fine gain adjustment of 2 channels was made at file B0039177 (144.5 ft) on 8/27/01 (log run 2).

Analysis Notes:

Analyst:	Sobczyk	Date:	09/06/01	Reference:	MAC-VZCP 1.7.9 Rev. 2
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Pre-run and post-run verification spectra were evaluated. All of the pre-survey verification spectra were within the control limits. The post-survey verification spectrum for logging run 2 (file B00039CAA) was the only post-survey verification spectrum that was outside of the control limits. The Full Width Half Maximum (FWHM) of the 1461- and 2614-keV photopeaks were both above the control limits, and the FWHM of the 609-keV photopeak was at the control limit. The peak counts per second for the 609- and 1461-keV photopeaks were below the lower warning limits for this post-run verification spectra. The counts and FWHM of the 609-, 1461- and 2614-keV photopeaks in the pre-survey verification file B0039CAB were all within the warning limits. Examinations of spectra indicate that the detector appears to have functioned normally during the log run.

Individual spectra were processed in batch mode using APTEC Supervisor. Concentrations were calculated in EXCEL, using parameters determined from analysis of calibration data collected in August 2000. The casing configuration was described in PNL-8800. The logging engineer measured a casing thickness of 0.375 in., and this casing thickness was used to compute the casing correction. Zero reference is the top of the casing. Water corrections and dead time corrections were not needed and were not applied.

Log Plot Notes:

Separate log plots are provided for gross gamma and dead time, naturally occurring radionuclides (^{40}K , ^{238}U , and ^{232}Th), and man-made radionuclides (^{137}Cs). For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, or casing and water corrections. These errors are discussed in the calibration report. A combination plot is also included to facilitate correlation.

Results and Interpretations:

^{137}Cs was the only man-made radionuclide detected. ^{137}Cs activity was detected above a log depth of 6.5 ft. The measured ^{137}Cs activity ranged from 0.3 to 14 pCi/g and is interpreted as surface contamination. In addition, ^{137}Cs activity of 0.3 pCi/g (the detection limit) was detected at 84 ft.

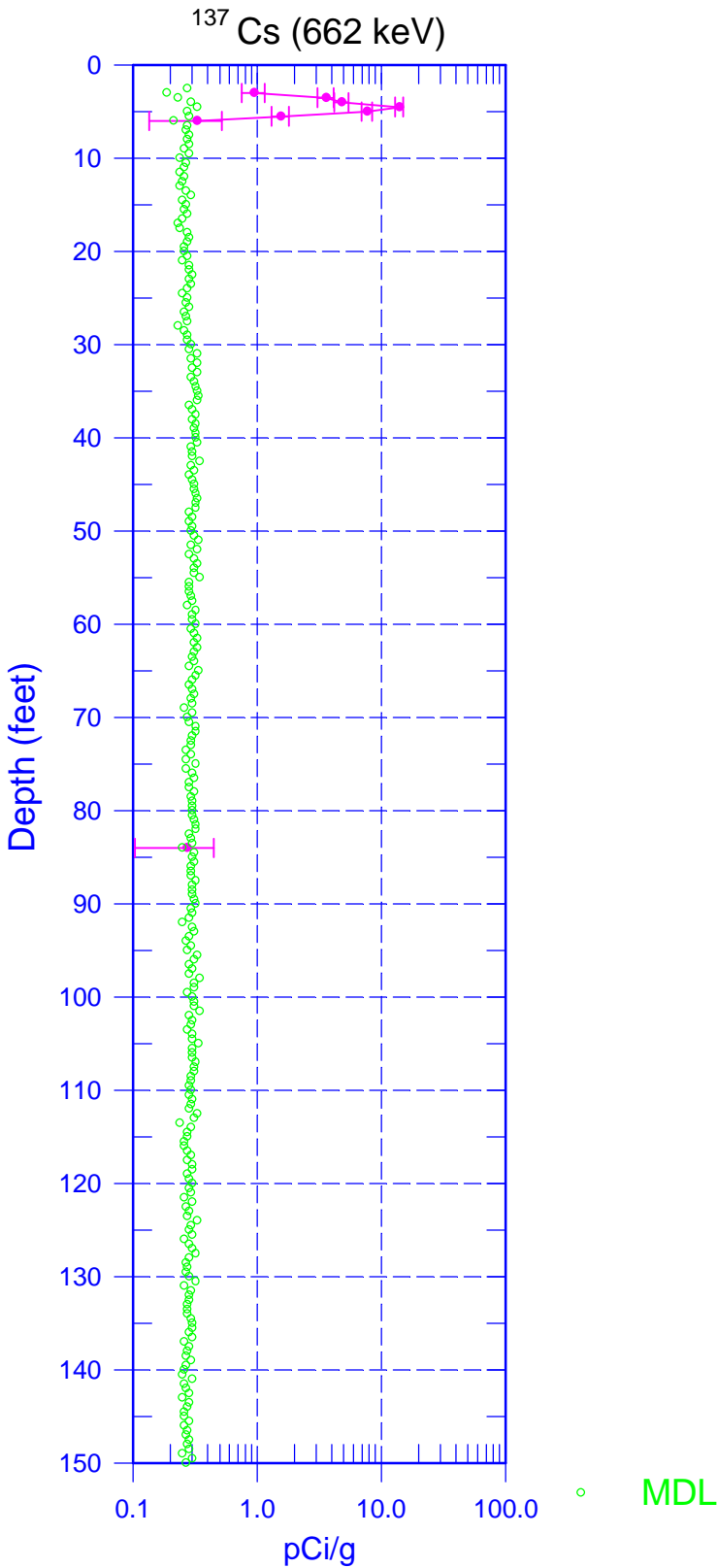
The changes in gross gamma counts depend primarily upon changes in ^{40}K activities. The increase in gross gamma counts from about 150 cps to about 210 cps at a log depth of about 30 ft corresponds with an increase in apparent ^{40}K activity from about 16 to 22 pCi/g. This increase in total gamma is interpreted as the Hanford H2. Similarly, the decrease in ^{40}K activity from about 22 to 18 pCi/g and the decrease in gross gamma counts from 180 to 155 cps at 133 ft may represent the transition from the finer grained H2 sediments to the coarser grained sediment of the Hanford H3.

¹ GWL – groundwater level

² TOC – top of casing

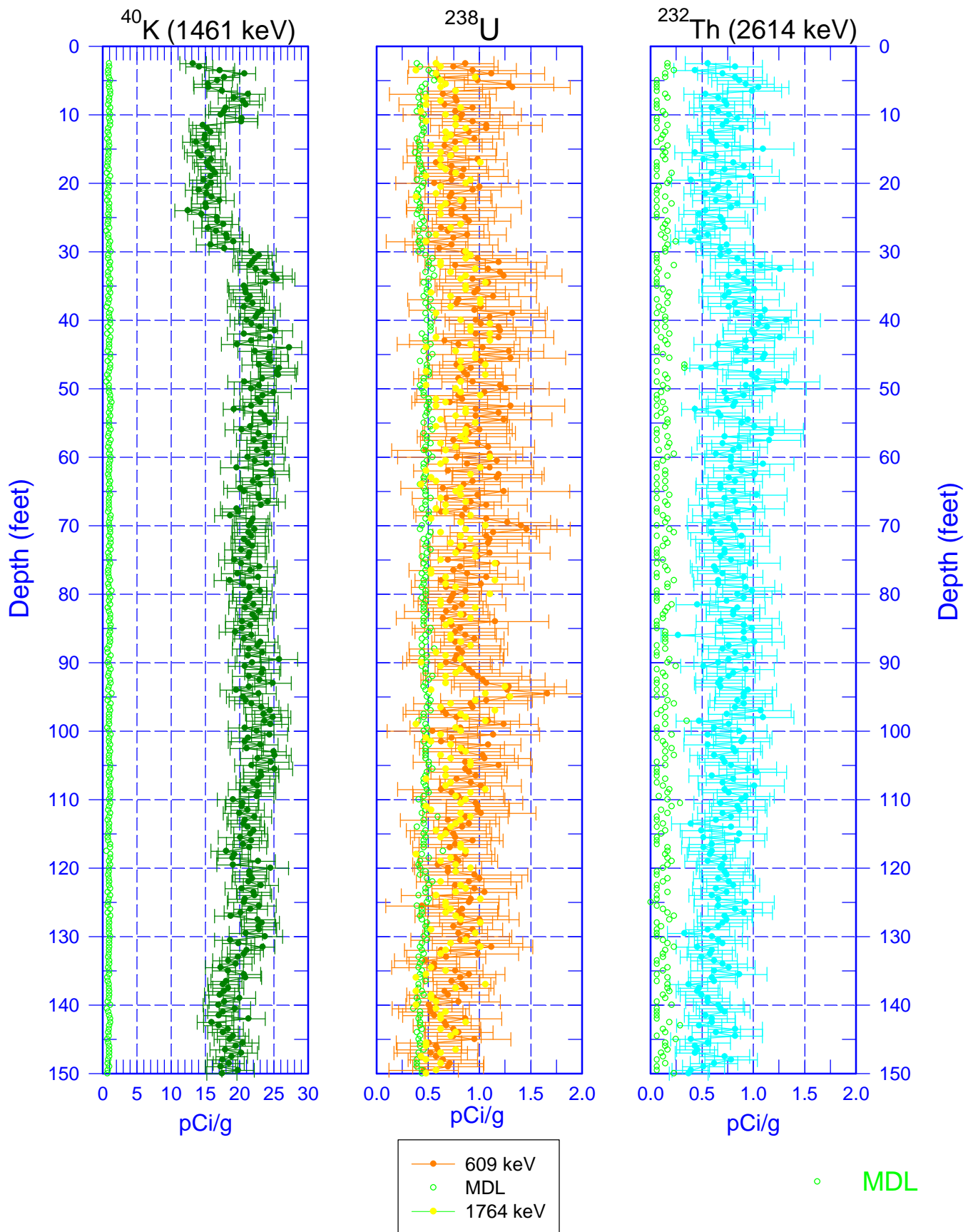
³ n/a – not applicable

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Man-Made Radionuclide Concentrations

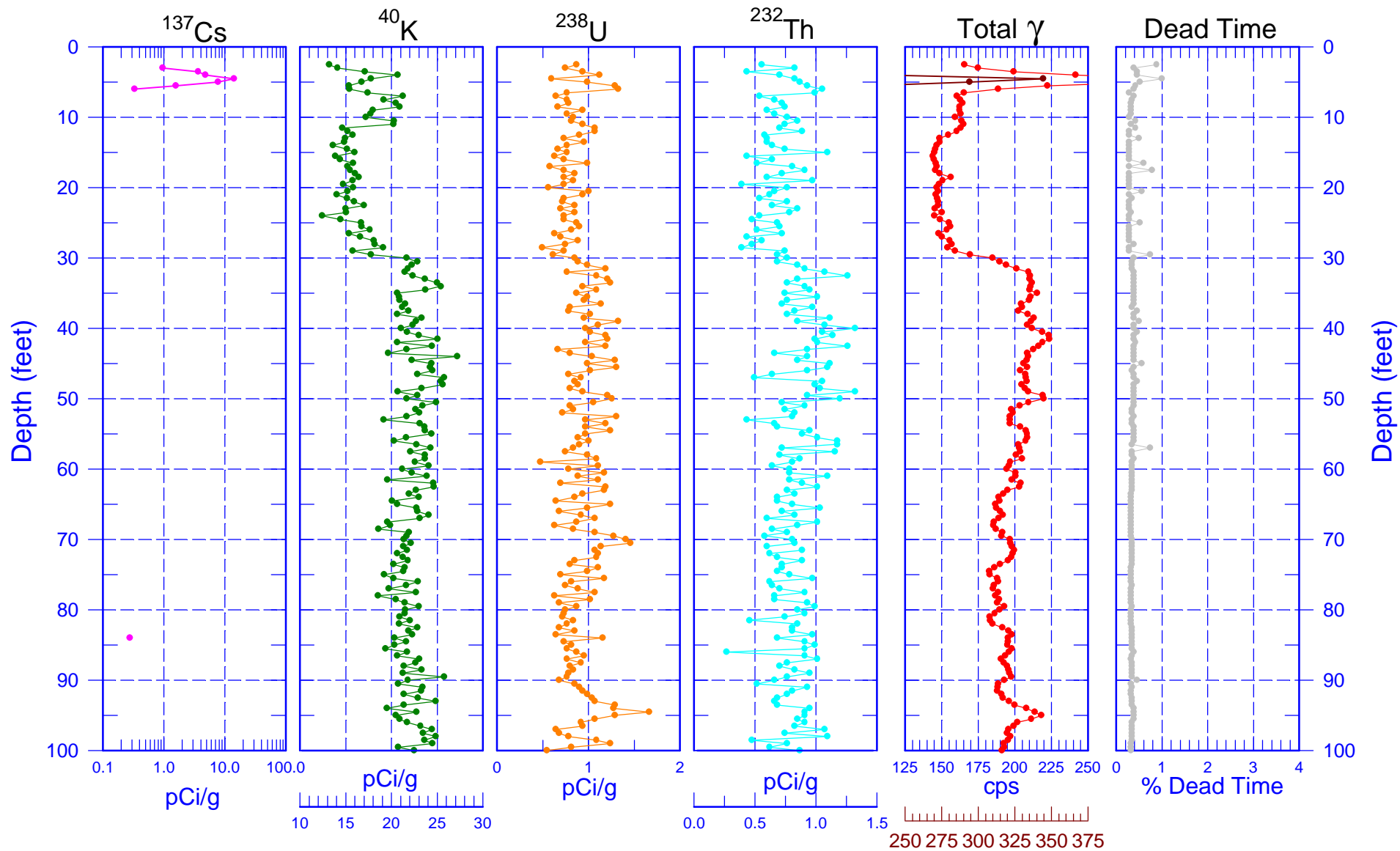


299-E33-72 (A6880)

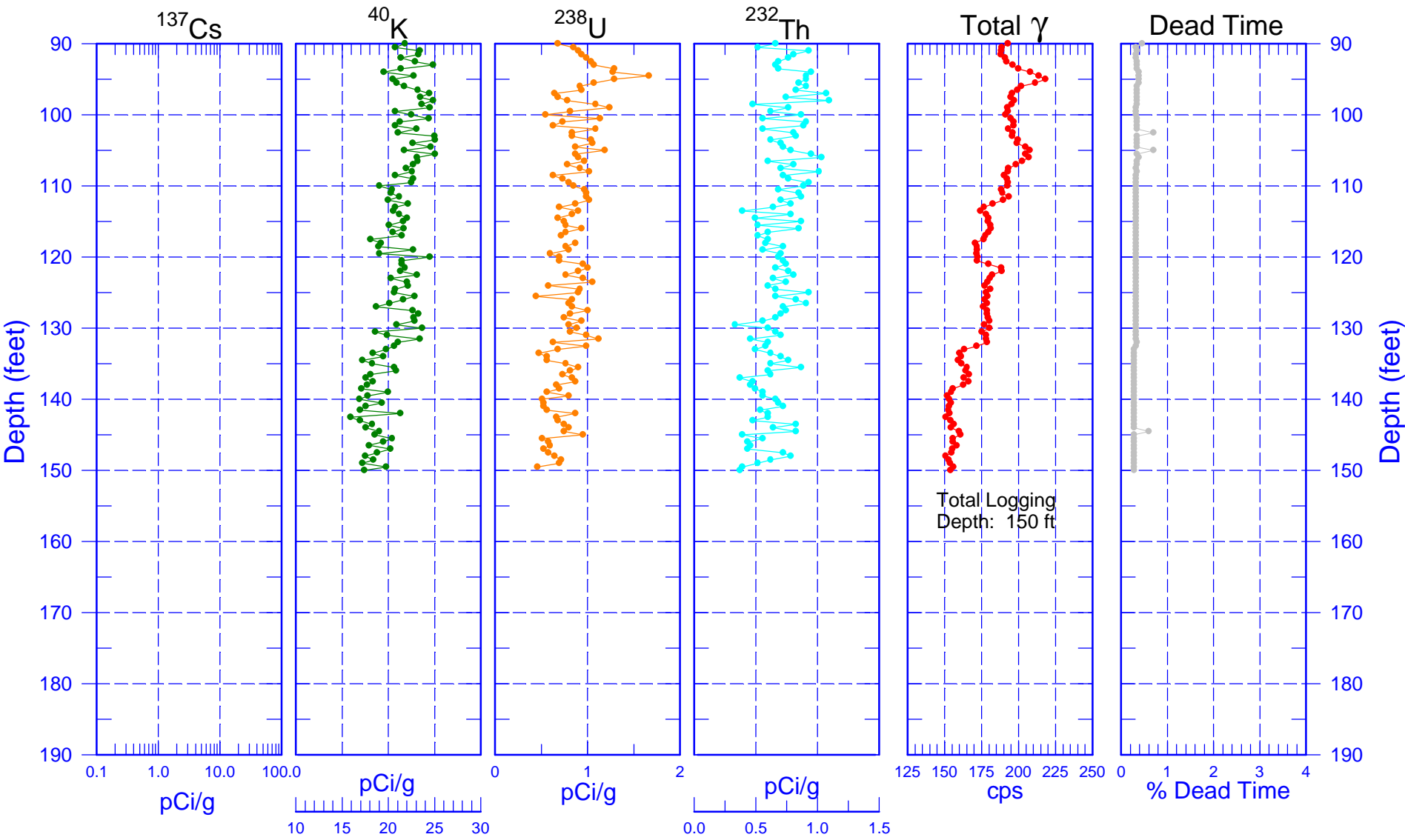
Natural Gamma Logs



299-E33-72 (A6880) Combination Plot

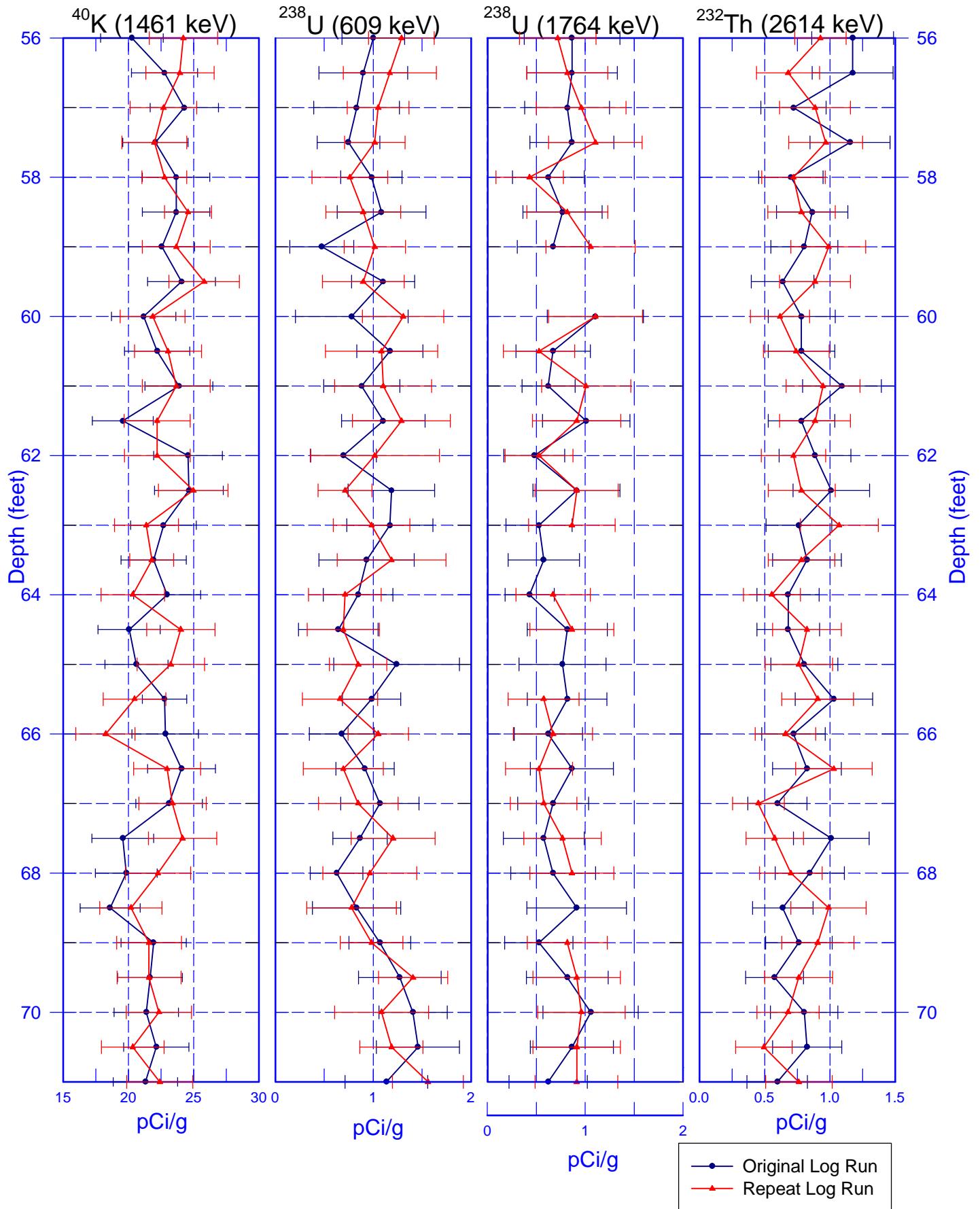


299-E33-72 (A6880) Combination Plot



299-E33-72 (A6880)

Rerun of Natural Gamma Logs



299-E33-72 (A6880)

